

CLAIMS:

1. A conveyor for moving an object comprising:
 - 5 a first rail having a rail aperture;
 - a second rail positioned substantially parallel to said first rail;
 - a roller coupled to said first rail;
 - a motor arranged to engage said roller;
 - a circuit board having a controller arranged to control said motor; and
 - 10 a sensor mounted to said circuit board;wherein said circuit board is mounted to said first rail such that said sensor may detect the presence of an object upon said roller through said rail aperture.
2. The conveyor of claim 1, wherein said controller is arranged to operate said
15 motor depending upon a signal received from said sensor.
3. The conveyor of claim 2, further comprising:
 - a second roller coupled to said first rail;
 - a second motor arranged to engage said second roller; and
 - 20 a slave circuit board having a controller arranged to control said second motor;wherein said slave circuit board is arranged to operate said second motor depending upon a signal received from said sensor.
4. The conveyor of claim 2, further comprising:
 - 25 a second roller coupled to said first rail;
 - a second motor arranged to engage said second roller;
 - a second circuit board having a second controller arranged to control said second motor; and
 - a second sensor mounted to said second circuit board;
 - 30 wherein said second controller is arranged to operate said second motor depending upon a signal received from said second sensor.

5. The conveyor of claim 4, wherein said circuit board and said second circuit board communicate with one another and may adjust operation of said motor and said second motor with respect to one another.

5 6. The conveyor of claim 1, further comprising a second sensor mounted to said circuit board, wherein said controller is arranged to operate said motor depending upon signals received from said sensor and from said second sensor.

7. The conveyor of claim 6, wherein said second sensor is arranged to detect the presence of an object upon said roller through said rail aperture.

8. The conveyor of claim 6, further comprising a second aperture in said rail, wherein said second sensor is arranged to detect the presence of an object upon said roller through said second rail aperture.

15 9. The conveyor of claim 1, further comprising a recessed portion in said rail, wherein a portion of said motor is located within said recessed portion.

10. A conveyor for moving an object comprising:
20 a first rail having a recessed portion;
a bearing assembly located within said recessed portion;
a stator proximal to said bearing assembly; and
a roller member rotatably coupled to said first rail via said bearing assembly;
wherein said roller member includes a circumferential plurality of alternating
25 magnetic poles arranged about the stator.

11. The conveyor of claim 10, further comprising a control circuit board having a controller arranged to control the operation of said roller member.

30 12. The conveyor of claim 11, further comprising a sensor, wherein said controller is arranged to control the operation of said roller member depending upon a signal received from said sensor.

13. The conveyor of claim 12, wherein said sensor is mounted to said control circuit board and arranged to detect the presence of an object upon said roller through an aperture in said first rail.

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14. The conveyor of claim 10, further comprising an idle roller rotatably coupled to said first rail.

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15. The conveyor of claim 10, further comprising a second rail having at least one idle roller.

16. The conveyor of claim 10, further comprising a covering upon the external surface of said roller member.

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17. A conveyor for moving an object comprising:
a first rail having a plurality of motor stators;
a second rail;
a plurality of passive rollers coupled to said second rail;
a plurality of drive rollers coupled to said first rail, each drive roller comprising a
20 motor rotor proximate to one of said motor stators;
a source of electrical power coupled to said motor stators;
a circuit board having a controller arranged to control said electrical power for rotation of at least one of said motor rotors relative to a motor stator.

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18. The conveyor of claim 17, wherein said motor stators and said motor rotors comprise an internal motor within each of said drive rollers.

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19. The conveyor of claim 18, wherein the first rail further comprises a recessed pocket proximal to each drive roller, and a portion of the internal motor of the drive roller proximal to said recessed pocket is located within said recessed pocket.

20. A conveyor comprising:

a first rail;
a second rail; and
a plurality of rollers coupled to each rail, at least one of said rollers including an internal motor; and

5 said internal motor generating at least 2 ounce-inches of torque;
the conveyor having a transport tray width and an overall device width, the overall device width being approximately equal to a number defined by the transport tray width plus 1.5 inches, wherein the conveyor does not include a belt, chain, or equivalent thereof.

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21. The conveyor of claim 20, wherein the overall device is no larger than a number defined by the transport tray width plus 1.25 inches.

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22. The conveyor of claim 20, wherein the internal motor is capable of generating up to 6 ounce-inches of torque.

23. The conveyor of claim 20, wherein the conveyor complies with class 3 of ISO 14644-1.

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24. The conveyor of claim 20, wherein a roller having an internal motor extends 0.6 inches or less into the transport tray width.

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